

What Is Claimed Is:

1. A device for fabricating components from a combination of materials, with said device having a bottom surface (1) having a lowerable building platform (2) for the component (14), a first introduction mechanism with a mechanism (5) for leveling a powdered material (4) in a processing plane (3) above said building platform (2), a laser light source for emitting a laser beam (11), a processing unit (6) having a focusing optical system (8) for focusing said laser beam onto said processing plane (3), and a positioning mechanism which can position said processing unit (6) in any desired positions in a plane parallel to said processing plane (3) above said component (14), wherein a suction or blow-off unit (10) for suctioning off material from said processing plane (3) and a second introduction mechanism (9) for a further material (12) are provided.

2. A device according to claim 1, wherein said suction or blow off unit (10) is attached to said processing unit (6).

3. A device according to claim 1 or 2, wherein said processing unit (6) is provided with a deflecting element (7) for said laser beam (11), with which said laser beam can be deflected onto any desired point within a region of said processing plane (3) dependent on the respective position of said positioning mechanism.

4. A device according to claim 3, wherein said deflecting element (7) is an X-Y scanning mirror system.

5. A device according to one of the claims 1 to 4, wherein said second introduction mechanism (9) is attached to said processing unit (6) and designed in such a manner that said further material can be brought in a concentrated manner in the focal range of said laser beam (11).

6. A device according to claim 5, wherein said second introduction mechanism (9) is a nozzle for powdered materials is directed onto said focal range of said laser beam.

7. A device according to claim 5, wherein said second introduction mechanism (9) is a feed mechanism for wire-shaped materials.

8. A device according to one of the claims 1 to 4, wherein said second introduction mechanism (9) comprises a supply tank for said further material (12) and a scraper which distributes said further material (12) in said processing plane (3) above said building platform (2).

9. A device according to one of the claims 1 to 8, wherein said positioning mechanism is an X-Y moving unit having two linear axes.

10. A device according to one of the claims 1 to 9, wherein said mechanism (5) for leveling has the form of a scraper.

11. A method of building components (14) from a combination of materials of at least a first (4) material and a second material (12), wherein said component (14) is built up by means of layer-

10030940-02203

wise application and melting of said materials layer for layer, having the following steps for at least one of said layers: distributing said first material (4) with a leveling mechanism (5) in a processing plane (3) above a lowerable building platform (2) for said component (14), and scanning the shape of the layer of said component (14) using a laser beam (11) focused onto said processing plane (3) in first regions of said processing plane (3), with said first material (4) being melted on according to said scanned shape of said first regions;

suctioning off or blowing off said first material (4) in second regions of said processing plane (3) in which said component is sought to be made of said second material (12) or a chemical compound of said second material;

applying said second material (12) in said second regions of said processing plane (3) and scanning the shape of the layer of said component (14) using a laser beam (11) focused onto said processing plane (3), with said second material (12) or said chemical compound of said second material being melted according to said scanned shape in said second regions; and lowering said building platform (2) the thickness of said melted layer if a further layer is sought to be applied.

12. A method according to claim 11, wherein said second material (12) is brought in a concentrated manner in said focal range of said laser beam via a separate introduction mechanism (9).

13. A method according to claim 11, wherein said second material (12) is applied in the same manner as said first material (4) in said second regions of said processing plane.

14. A method according to one of the claims 11 to 13, wherein said scanning of the shape of each layer of said component (14) in said processing plane (3) occurs by means of a

positioning mechanism which bears a focusing optical system (8) for focusing said laser beam (11) and can move said focusing optical system (8) on any desired paths in a plane parallel to said processing plane (3) above said component (14) .

15. A method according to claim 14, wherein said scanning of said first regions is executed by means of successive scanning of subregions above which said laser beam (11) is led by means of a scanning element (7) which is borne in a rotatable manner and is led with said laser beam by said position mechanism, whereas scanning of said second regions is executed with a stationary scanning element (7).

20030940-022000